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RPTO/SB/21 (08-00)

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U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Application Number 09/646,353

Filing Date November 27, 2000

First Named Inventor Choo

Group Art Unit 1639

Examiner Name Wessendorf, T.

Total Number of Pages in This Submission

15

Attorney Docket Number 019496-006700US

ENCLOSURES (check all that apply)☐ Fee Transmittal Form☐ Fee Attached☐ Amendment / Response☐ After Final☐ Affidavits/declaration(s)☐ Extension of Time Request☐ Express Abandonment Request☒ Information Disclosure Statement☐ Certified Copy of Priority Document(s)☐ Response to Missing Parts/
Incomplete Application☐ Response to Missing
Parts under 37 CFR
1.52 or 1.53☐ Assignment Papers
(for an Application)☐ Drawing(s)☐ Licensing-related Papers☐ Petition Routing Slip (PTO/SB/69)
and Accompanying Petition☐ Petition to Convert to a
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Remarks

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and
Individual name

Townsend and Townsend and Crew LLP

Joe Liebeschuetz

Reg No. 37,505

Signature

Date

January 14, 2003

CERTIFICATE OF MAILING

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PATENT
Attorney Docket No.: 019496-006700US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Choo et al.

Application No.: 09/646,353

Filed: November 27, 2000

For: NUCLEIC ACID BINDING
PROTEINS

Examiner: Teresa D. Wessendorf

Art Unit: 1639

INFORMATION DISCLOSURE
STATEMENT UNDER 37 CFR §1.97 and
§1.98

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The references cited on attached form PTO/SB/08A and PTO/SB/08B are being called to the attention of the Examiner. Copies of the references are enclosed. It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information, and no inference should be made that the information and references cited are, or are considered to be material to patentability because they are in this statement. No inference should be made that the information and references cited are prior art merely because they are in this statement.

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Respectfully submitted,



Joe Liebeschuetz
Reg. No. 37,505

TOWNSEND and TOWNSEND and CREW LLP
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1

of

12

Complete if Known

Application Number

09/646,353

Filing Date

November 27, 2000

First Named Inventor

Choo, Yen et al.

Art Unit

1639

Examiner Name

Teresa D. Wessendorf

Attorney Docket Number

019496-006700US

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
	AA	6,013,453	01-11-2000	Choo et al.	
	AB	6,007,988	12-28-1999	Choo et al.	
	AC	6,001,885	12-14-1999	Vega et al.	
	AD	5,972,615	10-26-1999	An et al.	
	AE	5,939,538	08-17-1999	Leavitt et al.	
	AF	5,916,794	06-29-1999	Chandrasegaran	
	AG	5,871,907	02-16-1999	Winter et al.	
	AH	5,871,902	02-16-1999	Weininger et al.	
	AI	5,869,618	02-09-1999	Lippman et al.	
	AJ	5,792,640	08-11-1998	Chandrasegaran	
	AK	5,789,538	08-04-1998	Rebar et al.	
	AL	5,702,914	12-30-1997	Evans et al.	
	AM	5,674,738	10-07-1997	Abramson et al.	
	AN	5,639,592	06-17-1997	Evans et al.	
	AO	5,597,693	01-28-1997	Evans et al.	
	AP	5,578,483	11-26-1996	Evans et al.	
	AQ	5,498,530	03-12-1996	Schatz et al.	
	AR	5,487,994	01-30-1996	Chandrasegaran	
	AS	5,436,150	07-25-1995	Chandrasegaran	
	AT	5,403,484	04-04-1995	Ladner et al.	
	AU	5,376,530	12-27-1994	De The et al.	
	AV	5,356,802	10-18-1994	Chandrasegaran	
	AW	5,350,840	09-27-1994	Call et al.	
	AX	5,348,864	09-20-1994	Barbacid	
	AY	5,340,739	08-23-1994	Stevens et al.	
	AZ	5,324,819	06-28-1994	Oppermann et al.	
	BA	5,324,818	06-28-1994	Nabel et al.	
	BB	5,324,638	06-28-1994	Tao et al.	
	BC	5,302,519	04-12-1994	Blackwood et al.	
	BD	5,243,041	09-07-1993	Fernandez-Pol	
	BE	5,223,409	06-29-1993	Ladner et al.	
	BF	5,198,346	03-30-1993	Ladner et al.	
	BG	5,096,815	03-17-1992	Ladner et al.	

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² Applicant's unique citation designation number (optional). ³ Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ⁴ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁷ Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet **2** of **12**

Complete if Known

Application Number	09/646,353
Filing Date	November 27, 2000
First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

U.S. PATENT DOCUMENTS

Examiner	Cite No. ¹	Document Number Number Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	BH	5,096,814	03-17-1992	Aivasidis et al.	
	BI	4,990,607	02-05-1991	Katagiri et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)				
	BJ	WO	00/27878		05-18-2000			<input type="checkbox"/>
	BK	WO	00/23464		04-27-2000			<input type="checkbox"/>
	BL	WO	99/48909		09-30-1999			<input type="checkbox"/>
	BM	WO	99/47656		09-23-1999			<input type="checkbox"/>
	BN	WO	99/45132		09-10-1999			<input type="checkbox"/>
	BO	WO	99/42474		08-26-1999			<input type="checkbox"/>
	BP	WO	99/41371		08-19-1999			<input type="checkbox"/>
	BQ	WO	99/36553		07-22-1999			<input type="checkbox"/>
	BR	WO	98/54311		12-03-1998			<input type="checkbox"/>
	BS	WO	97/27213		07-31-1997			<input type="checkbox"/>
	BT	WO	97/27212		07-31-1997			<input type="checkbox"/>
	BU	WO	96/32475		10-17-1996			<input type="checkbox"/>
	BV	WO	96/20951		07-11-1996			<input type="checkbox"/>
	BW	WO	96/11267		04-08-1996			<input type="checkbox"/>
	BX	WO	96/06110		02-29-1996			<input type="checkbox"/>
	BY	WO	95/19431		07-25-1995			<input type="checkbox"/>
	BZ	EP	875 567		04-11-1998			<input type="checkbox"/> abst only

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¹ Applicant's unique citation designation number (optional). ² Kind Codes of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet **3** of **12****Complete if Known**

Applicati n Number	09/646,353
Filing Date	November 27, 2000
First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

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OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CA	Agarwal et al., "Stimulation of Transcript Elongation Requires both the Zinc Finger and RNA Polymerase II Binding Domains of Human TFIIS," <u>Biochemistry</u> , 30(31):7842-7851 (1991).	
	CB	Anato et al., "A thermodynamic study of unusually stable RNA and DNA hairpins," <u>Nuc. Acids. Res.</u> , 19(21):5901-5905 (1991).	
	CC	Barbas, C. F., "Recent advances in phage display," <u>Curr. Opin. Biotech.</u> , 4:526-530 (1993).	
	CD	Barbas et al., "Assembly of combinatorial antibody libraries on phage surfaces: The gene III site," <u>PNAS</u> , 88:7978-7982 (1991).	
	CE	Barbas et al., "Semisynthetic combinatorial antibody libraries: A chemical solution to the diversity problem," <u>PNAS</u> , 89:4457-4461 (1992).	
	CF	Beerli et al., "Toward controlling gene expression at will: Specific regulation of the <i>erbB-2/HER-2</i> promoter by using polydactyl zinc finger proteins constructed from modular building blocks," <u>PNAS</u> , 95:14628-14633 (1998).	
	CG	Bellefroid et al., "Clustered organization of homologous KRAB zinc-finger genes with enhanced expression in human T lymphoid cells," <u>EMBO J.</u> , 12(4):1363-1374 (1993).	
	CH	Berg, J. M., "DNA Binding Specificity of Steriod Receptors," <u>Cell</u> , 57:1065-1068 (1989).	
	CI	Berg, J. M., "Sp1 and the subfamily of zinc finger proteins with guanine-rich binding sites," <u>PNAS</u> , 89:11109-11110 (1992).	
	CJ	Berg et al., "The Galvanization of Biology: A Growing Appreciation for the Roles of Zinc," <u>Science</u> , 271:1081-1085 (1996).	
	CK	Berg, J.M., "Letting your fingers do the walking," <u>Nature Biotechnology</u> , 15:323 (1997).	
	CL	Bergqvist et al., "Loss of DNA-binding and new transcriptional <i>trans</i> -activation function in polyomavirus large T-antigen with mutation of zinc finger motif," <u>Nuc. Acids Res.</u> , 18(9):2715-2720 (1990).	
	CM	Blaese et al., "Vectors in cancer therapy: how will they deliver?," <u>Cancer Gene Therapy</u> , 2(4):291-297 (1995).	
	CN	Caponigro et al., "Transdominant gentic analysis of a growth control pathway," <u>PNAS</u> , 95:7508-7513 (1998)	

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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 4 of 12

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Application Number	09/646,353
Filing Date	November 27, 2000
First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	CO	Celenza et al., "A Yeast Gene That Is Essential for Release from Glucose Repression Encodes a Protein Kinase," <u>Science</u> , 233:1175-1180 (1986).	
	CP	Cheng et al., "Identification of Potential Target Genes for Adr1p through Characterization of Essential Nucleotides in UAS1," <u>Mol. Cellular Biol.</u> , 14(6):3842-3852 (1994).	
	CQ	Cheng et al., "A Single Amino Acid substitution in Zinc Finger 2 of Adr1p Changes its Binding Specificity at two Positions in UAS1," <u>J. Mol. Biol.</u> , 251:1-8 (1995)	
	CR	Choo et al., "A role in DNA binding for the linker sequences of the first three zinc fingers of TFIIIA," <u>Nuc. Acids Res.</u> , 21(15):3341-3346 (1993).	
	CS	Choo et al., "All wrapped up," <u>Nature Structural Biology</u> , 5(4):253-255 (1998).	
	CT	Choo et al., "Designing DNA-binding proteins on the surface of filamentous phage," <u>Curr. Opin. Biotechnology</u> , 6:431-436 (1995).	
	CU	Choo, Y., "End effects in DNA recognition by zinc finger arrays," <u>Nuc. Acids Res.</u> , 26(2):554-557 (1998).	
	CV	Choo et al., "In vivo repression by a site-specific DNA-binding protein designed against an oncogenic sequence," <u>Nature</u> , 372:642-645 (1994).	
	CW	Choo et al., "Promoter-specific Activation of Gene Expression Directed by Bacteriophage-selected Zinc Fingers," <u>J. Mol. Biol.</u> , 273:525-532 (1997).	
	CX	Choo et al., "Selection of DNA binding sites for zinc fingers using rationally randomized DNA reveals coded interactions," <u>PNAS</u> , 91:11168-11172 (1994)	
	CY	Choo et al., "Toward a code for the interactions of zinc fingers with DNA: Selection of randomized fingers displayed on phage," <u>PNAS</u> , 91:11163-11167 (1994).	
	CZ	Clarke et al., "Zinc Fingers in <i>Caenorhabditis elegans</i> : Finding Families and Probing Pathways," <u>Science</u> , 282:2018-2022 (1998).	
	DA	Corbi, N. et al., "Synthesis of a New Zinc Finger Peptide; Comparison of its 'Code' Deduced and 'CASTing' Derived Binding Sites," <u>FEBS Letters</u> , 417:71-74 (1997).	
	DB	Crozatier et al., "Single Amino Acid Exchanges in Separate Domains of the Drosophila serendipity δ Zinc Finger Protein Cause Embryonic and Sex Biased Lethality," <u>Genetics</u> , 131:905-916 (1992).	
	DC	Debs et al., "Regulation of Gene Expression <i>in Vivo</i> by Liposome-mediated Delivery of a Purified Transcription Factor*," <u>J. Biological Chemistry</u> , 265(18):10189-10192 (1990).	
Examiner Signature			Date Considered

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet **5** of **12**

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Application Number	09/646,353
Filing Date	November 27, 2000
First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	DD	Desjarlais et al., "Length-encoded multiplex binding site determination: Application to zinc finger proteins," <u>PNAS</u> , 91:11099-11103 (1994).	
	DE	Desjarlais et al., "Use of a zinc-finger consensus sequence framework and specificity rules to design specific DNA binding proteins," <u>PNAS</u> , 90:2256-2260 (1993)	
	DF	Desjarlais et al., "Toward rules relating zinc finger protein sequences and DNA binding site preferences," <u>PNAS</u> , 89(16):7345-7349 (1992)	
	DG	Desjarlais et al., "Redesigning the DNA-Binding Specificity of a Zinc Finger Protein: A Data Base-Guided Approach," <u>Proteins: Structure, Function, and Genetics</u> , 12(2):101-104 (1992)	
	DH	Desjarlais et al., "Redesigning the DNA-Binding Specificity of a Zinc-Finger Protein: A Data Base-Guided Approach," <u>Proteins: Structure, Function, and Genetics</u> , 13:272 (1992).	
	DI	DiBello et al., "The Drosophila Broad-Complex Encodes a Family of Related Proteins Containing Zinc Fingers," <u>Genetics</u> , 129:385-397 (1991).	
	DJ	Elrod-Erickson et al., "High-resolution structures of variant Zif268-DNA complexes: implications for understanding zinc finger-DNA recognition," <u>Structure</u> , 6(4):451-464 (1998).	
	DK	Elrod-Erickson et al., "Zif268 protein-DNA complex refined at 1.6 Å: a model system for understanding zinc finger-DNA interactions," <u>Structure</u> , 4(10):1171-1180 (1996)	
	DL	Fairall et al., "The crystal structure of a two zinc-finger peptide reveals an extension to the rules for zinc-finger/DNA recognition," <u>Nature</u> , 366:483-487 (1993)	
	DM	Frankel et al., "Fingering Too Many Proteins," <u>Cell</u> , 53:675 (1988).	
	DN	Friesen et al., "Phage Display of RNA Binding Zinc Fingers from Transcription Factor IIIA*," <u>J. Biological Chem.</u> , 272(17):10994-10997 (1997).	
	DO	Friesen et al., "Specific RNA binding proteins constructed from zinc fingers," <u>Nature Structural Biology</u> , 5(7):543-546(1998).	
	DP	Ghosh, D., "A relational database of transcription factors," <u>Nuc. Acids Res.</u> , 18(7):1749-1756 (1990).	
	DQ	Gogos et al., "Recognition of diverse sequences by class I zinc fingers: Asymmetries and indirect effects on specificity in the interaction between CF2II and A+T-rich sequence elements," <u>PNAS</u> , 93(5):2159-2164 (1996)	

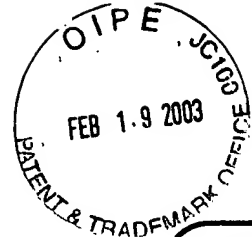
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Signature

Date
Considered

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of

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	DR	Gossen et al., "Tight control of gene expression in mammalian cells by tetracycline-responsive promoters," <u>PNAS</u> , 89:5547-5551 (1992)	
	DS	Greisman et al., "A General Strategy for Selecting High-Affinity Zinc Finger Proteins for Diverse DNA Target Sites," <u>Science</u> , 275:657-661 (1997)	
	DT	Hamilton et al., "Comparison of the DNA Binding Characteristics of the Related Zinc Finger Proteins WT1 and EGR1," <u>Biochemistry</u> , 37:2051-2058 (1998).	
	DU	Hamilton et al., "High affinity binding sites for the Wilms' tumor suppressor protein WT1," <u>Nuc. Acids Res.</u> , 23(2):277-284 (1995).	
	DV	Hanas et al., "Internal deletion mutants of <i>Xenopus</i> transcription factor IIIA," <u>Nuc. Acids Res.</u> , 17(23):9861-9870 (1989).	
	DW	Hayes et al., "Locations of Contacts between Individual Zinc Fingers of <i>Xenopus laevis</i> Transcription Factor IIIA and the Internal Control Region of a 5S RNA Gene," <u>Biochemistry</u> , 31:11600-11605 (1992).	
	DX	Heinzel et al., "A complex containing N-CoR, mSin3 and histone deacetylase mediates transcriptional repression," <u>Nature</u> , 387:43-48 (1997).	
	DY	Hirst et al., "Discrimination of DNA response elements for thyroid hormone and estrogen is dependant on dimerization of receptor DNA binding domains," <u>PNAS</u> , 89:5527-5531 (1992).	
	DZ	Hoffman et al., "Structures of DNA-binding mutant zinc finger domains: Implications for DNA binding," <u>Protein Science</u> , 2:951-965 (1993).	
	EA	Isalan et al., "Comprehensive DNA Recognition through Concerted Interactions from Adjacent Zinc Fingers," <u>Biochemistry</u> , 37:12026-12033 (1998).	
	EB	Jacobs, G. H., "Determination of the base recognition positions of zinc fingers from sequence analysis," <u>EMBO J.</u> , 11(12):4507-4517 (1992).	
	EC	Jamieson et al., "A zinc finger directory for high-affinity DNA recognition," <u>PNAS</u> , 93:12834-12839 (1996).	
	ED	Jamieson et al., "In Vitro Selection of Zinc Fingers with Altered DNA-Binding Specificity," <u>Biochemistry</u> , 33(19):5689-5695 (1994)	
	EE	Julian et al., "Replacement of His23 by Cys in a zinc finger of HIV-1 NCp7 led to a change in 1H NMR-derived 3D structure and to a loss of biological activity," <u>FEBS letters</u> , 331(1,2):43-48 (1993).	

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Application Number	09/646,353
Filing Date	November 27, 2000
First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	EF	Kamiuchi et al., "New multi zinc finger protein: biosynthetic design and characteristics of DNA recognition," <u>Nucleic Acids Symposium Series</u> , 37:153-154 (1997).	
	EG	Kang, J.S. et al., "Zinc Finger Proteins as Designer Transcription Factors," <u>J. Biol. Chem.</u> , 275(12):8742-8748 (2000).	
	EH	Kim et al., "A 2.2 Å resolution crystal structure of a designed zinc finger protein bound to DNA," <u>Nat. Struct. Biol.</u> , 3(11):940-945 (1996)	
	EI	Kim et al., "Design of TATA box-binding protein/zinc finger fusions for targeted regulation of gene expression," <u>PNAS</u> , 94:3616-3620 (1997)	
	EJ	Kim et al., "Getting a handhold on DNA: Design of poly-zinc finger proteins with femtomolar dissociation constants," <u>PNAS</u> , 95:2812-2817 (1998).	
	EK	Kim et al., "Serine at Position 2 in the DNA Recognition helix of a Cys2-His2 Zinc finger Peptide is Not, in General, Responsible for Base Recognition," <u>J. Mol. Biol.</u> , 252:1-5 (1995).	
	EL	Kim et al., "Site-specific cleavage of DNA-RNA hybrids by zinc finger/FokI cleavage domain fusions," <u>Gene</u> , 203:43-49 (1997).	
	EM	Kim et al., "Transcriptional repression by zinc finger peptides," <u>J. Biol. Chem.</u> , 272(47):29795-28000 (1997).	
	EN	Kinzler et al., "The GLI gene is a member of the Kruppel family of zinc finger proteins," <u>Nature</u> , 332:371-4 (1988).	
	EO	Klug, A., "Gene Regulatory Proteins and Their Interaction with DNA," <u>Ann. NY Acad. Sci.</u> , 758:143-160 (1995).	
	EP	Klug et al., "Protein Motifs 5: Zinc Fingers," <u>FASEB J.</u> , 9:597-604 (1995).	
	EQ	Klug, A., "Zinc Finger Peptides for the Regulation of Gene Expression," <u>J. Mol. Biol.</u> , 293:215-218 (1999).	
	ER	Kothekar, V., "Computer simulation of zinc finger motifs from cellular nucleic acid binding protein and their interaction with consensus DNA sequences," <u>FEBS Letters</u> , 274(1-2):217-222 (1990).	
	ES	Kriwacki et al., "Sequence-specific recognition of DNA by zinc-finger peptides derived from the transcription factor Sp1," <u>PNAS</u> , 89:9759-9763 (1992).	

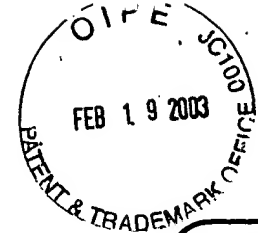
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First Named Inventor	Choo, Yen et al.
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	ET	Kulda et al., "The regulatory gene <i>areA</i> mediating nitrogen metabolite repression in <i>Aspergillus nidulans</i> . Mutations affecting specificity of gene activation alter a loop residue of a putative zinc finger," <u>EMBO J.</u> , 9(5):1355-1364 (1990).	
	EU	Laird-Offringa et al., "RNA-binding proteins tamed," <u>Nat. Structural Biol.</u> , 5(8):665-668 (1998).	
	EV	Liu et al., "Design of polydactyl zinc-finger proteins for unique addressing within complex genomes," <u>PNAS</u> , 94(11):5525-5530 (1997).	
	EW	Mandel-Gutfreund et al., "Quantitative parameters for amino acid-base interaction: implications for prediction of protein-DNA binding sites," <u>Nuc. Acids Res.</u> , 26(10):2306-2312 (1998).	
	EX	Margolin et al., "Krueppel-associated boxes are potent transcriptional repression domains," <u>PNAS</u> , 91:4509-4513 (1994).	
	EY	Mizushima et al., "pEF-BOS, a powerful mammalian expression vector," <u>Nuc. Acids Res.</u> , 18(17):5322 (1990).	
	EZ	Nakagama et al., "Sequence and Structural Requirements for High-Affinity DNA Binding by the WT1 Gene Product," <u>Molecular and Cellular Biology</u> , 15(3):1489-1498 (1995).	
	FA	Nardelli et al., "Zinc finger-DNA recognition: analysis of base specificity by site-directed mutagenesis," <u>Nuc. Acids Res.</u> , 20(16):4137-4144 (1992)	
	FB	Nardelli et al., "Base sequence discrimination by zinc-finger DNA-binding domains," <u>Nature</u> , 349:175-178 (1991).	
	FC	Nekludova et al., "Distinctive DNA conformation with enlarged major groove is found in Zn-finger-DNA and other protein-DNA complexes," <u>PNAS</u> , 91:6948-6952 (1994)	
	FD	Orkin et al., "Report and Recommendations of the Panel to Assess the NIH Investment in Research on Gene Therapy," December 7, 1995.	
	FE	Pabo et al., "Protein-DNA Recognition," <u>Ann. Rev. Biochem.</u> , 53:293-321 (1984).	
	FF	Pabo et al., "Systematic Analysis of Possible Hydrogen Bonds between Amino Acid Side Chains and B-form DNA," <u>J. Biomolecular Struct. Dynamics</u> , 1:1039-1049 (1983).	
	FG	Pabo, C. O., "Transcription Factors: Structural Families and Principals of DNA Recognition," <u>Ann. Rev. Biochem.</u> , 61:1053-1095 (1992).	

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Attorney Docket Number	019496-006700US

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	FH	Pavletich et al., "Crystal Structure of a Five-Finger GLI-DNA Complex: New Perspectives on Zinc Fingers," <u>Science</u> , 261:1701-1707 (1993).	
	FI	Pavletich et al., "Zinc Finger-DNA Recognition: Crystal Structure of a Zif268-DNA Complex at 2.1 Å," <u>Science</u> , 252:809-817 (1991)	
	FJ	Pengue et al., "Kruppel-associated box-mediated repression of RNA polymerase II promoters is influenced by the arrangement of basal promoter elements," <u>PNAS</u> , 93:1015-1020 (1996).	
	FK	Pengue et al., "Repression of transcriptional activity at a distance by the evolutionarily conserved KRAB domain present in a subfamily of zinc finger proteins," <u>Nuc. Acids Res.</u> , 22(15):2908-2914 (1994).	
	FL	Pengue et al., "Transcriptional Silencing of Human Immunodeficiency Virus Type 1 Long Terminal Repeat-Driven Gene Expression by the Kruppel-Associated Box Repressor Domain Targeted to the Transactivating Response Element," <u>J. Virology</u> , 69(10):6577-6580 (1995).	
	FM	Pomerantz et al., "Analysis of homeodomain function by structure-based design of a transcription factor," <u>PNAS</u> , 92:9752-9756 (1995)	
	FN	Pomerantz et al., "Structure-Based Design of a Dimeric Zinc Finger Protein," <u>Biochemistry</u> , 37(4):965-970 (1998)	
	FO	Pomerantz et al., "Structure-Based Design of Transcription Factors," <u>Science</u> , 267:93-96 (1995).	
	FP	Qian et al., "Two-Dimensional NMR Studies of the Zinc Finger Motif: Solution Structures and Dynamics of Mutant ZFY Domains Containing Aromatic Substitutions in the Hydrophobic Core," <u>Biochemistry</u> , 31:7463-7476 (1992).	
	FQ	Quigley et al., "Complete Androgen Insensitivity Due to Deletion of Exon C of the Androgen Receptor Gene Highlights the Functional Importance of the Second Zinc Finger of the Androgen Receptor <i>in Vivo</i> ," <u>Molecular Endocrinology</u> , 6(7):1103-1112 (1992).	
	FR	Rauscher et al., "Binding of the Wilms' Tumor Locus Zinc Finger Protein to the EGR-1 Consensus Sequence," <u>Science</u> , 250:1259-1262 (1990).	
	FS	Ray et al., "Repressor to activator switch by mutations in the first Zn finger of the glucocorticoid receptor: Is direct DNA binding necessary?," <u>PNAS</u> , 88:7086-7090 (1991).	
	FT	Rebar et al., "Phage Display Methods for Selecting Zinc Finger Proteins with Novel DNA-Binding Specificities," <u>Methods in Enzymology</u> , 267:129-149 (1996).	

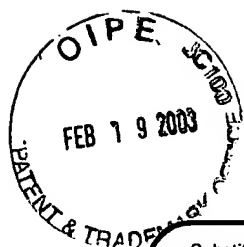
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	FU	Rebar et al., "Zinc Finger Phage: Affinity Selection of Fingers with New DNA-Binding Specificities," <u>Science</u> , 263:671-673 (1994)	
	FV	Reith et al., "Cloning of the major histocompatibility complex class II promoter binding protein affected in a hereditary defect in class II gene regulation," <u>PNAS</u> , 86:4200-4204 (1989).	
	FW	Rhodes et al., "Zinc Fingers: They play a key part in regulating the activity of genes in many species, from yeast to humans. Fewer than 10 years ago no one knew they existed," <u>Scientific American</u> , 268:56-65 (1993)	
	FX	Rice et al., "Inhibitors of HIV Nucleocapsid Protein Zinc Fingers as Candidates for the Treatment of AIDS," <u>Science</u> , 270:1194-1197 (1995).	
	FY	Rivera et al., "A humanized system for pharmacologic control of gene expression," <u>Nature Medicine</u> , 2(9):1028-1032 (1996)	
	FZ	Rollins et al., "Role of TFIIIA Zinc Fingers In vivo: Analysis of Single-Finger Function in Developing <i>Xenopus</i> Embryos," <u>Molecular Cellular Biology</u> , 13(8):4776-4783 (1993).	
	GA	Sadowski et al., "GAL4-VP16 is an Unusually Potent Transcriptional Activator," <u>Nature</u> , 335:563-564 (1998).	
	GB	Saleh et al., "A Novel Zinc Finger Gene on Human Chromosome 1qter That Is Alternatively Spliced in Human Tissues and Cell Lines," <u>Am. J. Hum. Genet.</u> , 52:192-203 (1993).	
	GC	Shi et al., "A direct comparison of the properties of natural and designed finger proteins," <u>Chem. & Biol.</u> , 2(2):83-89 (1995)	
	GD	Shi et al., "DNA Unwinding Induced by Zinc Finger Protein Binding," <u>Biochemistry</u> , 35:3845-3848 (1996)	
	GE	Shi et al., "Specific DNA-RNA Hybrid Binding by Zinc Finger Proteins," <u>Science</u> , 268:282-284 (1995).	
	GF	Singh et al., "Molecular Cloning of an Enhancer Binding Protein: Isolation by Screening of an Expression Library with a Recognition Site DNA," <u>Cell</u> , 52:415-423 (1988).	
	GG	Skerka et al., "Coordinate Expression and Distinct DNA-Binding Characteristics of the four EGR-Zinc Finger Proteins in Jukat T Lymphocytes," <u>Immunobiology</u> , 198:179-191 (1997).	
	GH	South et al., "The Nucleocapsid Protein Isolated from HIV-1 Particles Binds Zinc and Forms Retroviral-Type Zinc Fingers," <u>Biochemistry</u> , 29:7786-7789 (1990).	

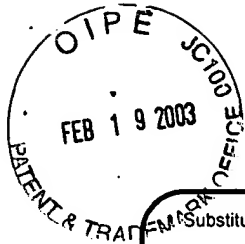
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First Named Inventor	Choo, Yen et al.
Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

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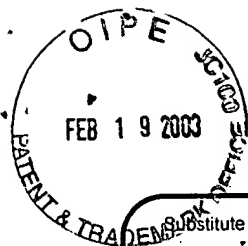
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	GI	Suzuki et al. "DNA recognition code of transcription factors in the helix-turn-helix, probe helix, hormone receptor, and zinc finger families," <u>PNAS</u> , 91:12357-12361 (1994)	
	GJ	Suzuki et al., "Stereochemical basis of DNA recognition by Zn fingers," <u>Nuc. Acids Res.</u> , 22(16):3397-3405 (1994)	
	GK	Swirnoff et al., "DNA-Binding Specificity of NGFI-A and Related Zinc Finger Transcription Factors," <u>Mol. Cell. Biol.</u> , 15(4):2275-2287 (1995)	
	GL	Taylor et al, "Designing Zinc-Finger ADR1 Mutants with Altered Specificity of DNA Binding to T in UAS1 Sequences," <u>Biochemistry</u> , 34:3222-3230 (1995)	
	GM	Thiesen et al., "Amino Acid Substitutions in the SP1 Zinc Finger Domain Alter the DNA Binding Affinity to Cognate SP1 Target Site," <u>Biochem. Biophys. Res. Communications</u> , 175(1):333-338 (1991).	
	GN	Thiesen et al., "Determination of DNA binding specificities of mutated zinc finger domains," <u>FEBS Letters</u> , 283(1):23-26 (1991).	
	GO	Thukral et al., "Alanine scanning site-directed mutagenesis of the zinc fingers of transcription factor ADR1: Residues that contact DNA and that transactivate," <u>PNAS</u> , 88:9188-9192 (1991), + correction page.	
	GP	Thukral et al., "Localization of a Minimal Binding Domain and Activation Regions in Yeast Regulatory Protein ADR1," <u>Molecular Cellular Biology</u> , 9(6):2360-2369 (1989).	
	GQ	Thukral et al., "Mutations in the Zinc Fingers of ADR1 That Change the Specificity of DNA Binding and Transactivation," <u>Mol. Cell Biol.</u> , 12(6):2784-2792 (1992)	
	GR	Thukral et al., "Two Monomers of Yeast Transcription Factor ADR1 Bind a Palindromic Sequence Symmetrically to Activate <i>ADH2</i> Expression," <u>Molecular Cellular Biol.</u> , 11(3):1566-1577 (1991).	
	GS	Vortkamp et al., "Identification of Optimized Target Sequences for the GLI3 Zinc Finger Protein," <u>DNA Cell Biol.</u> , 14(7):629-634 (1995).	
	GT	Wang, S.W. et al., "Dimerization of Zinc fingers Mediated by Peptides Evolved <i>in vitro</i> from Random Sequences," <u>PNAS</u> , 96: 9568-9573 (1999).	
	GU	Webster et al., "Conversion of the E1A Cys4 zinc finger to a nonfunctional His2, Cys2 zinc finger by a single point mutation," <u>PNAS</u> , 88:9989-9993 (1991).	
	GV	Whyatt et al., "The two zinc finger-like domains of GATA-1 have different DNA binding specificities," <u>EMBO J.</u> , 12(13):4993-5005 (1993).	

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Art Unit	1639
Examiner Name	Teresa D. Wessendorf
Attorney Docket Number	019496-006700US

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	GW	Wilson et al., "In Vivo Mutational analysis of the NGFI-A Zinc Fingers*," <u>J. Biol. Chem.</u> , 267(6):3718-3724 (92).
	GX	Witzgall et al., "The Kruppel-associated box-A (KRAB-A) domain of zinc finger proteins mediates transcriptional repression," <u>PNAS</u> , 91:4514-4518 (1994).
	GY	Wolfe, S.A. et al., "Analysis of Zinc Fingers Optimized via Phage Display: Evaluating the Utility of a Recognition Code," <u>J. Mol. Biol.</u> , 285:1917-1934 (1999).
	GZ	Wright et al., "Expression of a Zinc Finger Gene in HTLV-I- and HTLV-II-transformed Cells," <u>Science</u> , 248:588-591 (1990).
	HA	Wu et al., "Building zinc fingers by selection: Toward a therapeutic application," <u>PNAS</u> , 92:344-348 (1995).
	HB	Yang et al., "Surface plasmon resonance based kinetic studies of zinc finger-DNA interactions," <u>J. Immunol. Methods</u> , 183:175-182 (1995).
	HC	Yu et al., "A hairpin ribozyme inhibits expression of diverse strains of human immunodeficiency virus type 1," <u>PNAS</u> , 90:6340-6344 (1993).

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